1: J Anim Sci. 2007 Feb;85(2):486-93. Epub 2006 Oct 13.

Lipid microencapsulation allows slow release of organic acids and natural identical flavors along the swine intestine.

Piva A, Pizzamiglio V, Morlacchini M, Tedeschi M, Piva G.

DIMORFIPA, Universita di Bologna, 40064 Ozzano Emilia, Bologna, Italy;

The purpose of the present work was to investigate the in vivo concentrations of sorbic acid and vanillin as markers of the fate of organic acids (OA) and natural identical flavors (NIF) from a microencapsulated mixture and from the same mixture nonmicroencapsulated, and the possible consequences on the intestinal microbial fermentation. Fifteen weaned pigs were selected from 3 dietary groups and were slaughtered at 29.5 +/- 0.27 kg of BW. Diets were (1) control; (2) control supplemented with a blend of OA and NIF microencapsulated with hydrogenated vegetable lipids (protected blend, PB); and (3) control supplemented with the same blend of OA and NIF mixed with the same protective matrix in powdered form but without the active ingredient coating (nonprotected blend, NPB). Stomach, cranial jejunum, caudal jejunum, ileum, cecum, and colon were sampled to determine the concentrations of sorbic acid and vanillin contained in the blend and used as tracers. Sorbic acid and vanillin were not detectable in pigs fed the control, and their concentrations were not different in the stomach of PB and NPB treatments. Pigs fed PB showed a gradual decrease of the tracer concentrations along the intestinal tract, whereas pigs fed NPB showed a decline of tracer concentration in the cranial jejunum and onwards, compared with the stomach concentrations. Sorbic acid and vanillin concentrations along the intestinal tract were greater (P = 0.02) in pigs fed PB compared with pigs fed NPB. Pigs fed PB had lower (P = 0.03) coliforms in the caudal jejunum and the cecum than pigs fed the control or NPB. Pigs fed the control or PB had a greater (P = 0.03) lactic acid bacteria plate count in the cecum than pigs fed NPB, which showed a reduction (P = 0.02) of lactic acid concentrations and greater (P = 0.02)

pH values in the caudal jejunum. The protective lipid matrix used for microencapsulation of the OA and NIF blend allowed slow-release of both active ingredients and prevented the immediate disappearance of such compounds upon exiting the stomach.

PMID: 17040943 [PubMed - in process]

What are natural and synthetic flavours ?


Quiz

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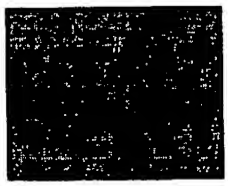

Flavours are (mixtures of) substances used to give taste and/or smell to food. Different classes of flavours are defined by law, such as natural, natural-identical or artificial flavouring substances, flavouring preparations of plant or animal origin, process flavourings and smoke flavourings.

- **Natural flavourings** are flavouring substances or flavouring preparations which are extracted from vegetable or animal materials and are not further chemically modified or changed. An example is vanilla extract.
- **Natural identical flavourings** are substances that are chemically identical to natural substances, but which are obtained by chemical processes or by chemical modification of other natural substances. An example is vanillin, which is identical to the vanillin in vanilla, but not obtained from vanilla pods.
- **Artificial (or synthetic) flavourings** are substances obtained by chemical synthesis or chemical modification of natural substances, but which are not present in natural products.
- A **flavouring preparation** is a product from natural origin, but which is not highly purified. For example concentrated apple juice can be defined as a flavouring preparation.
- **Process flavourings** are substances that are formed from natural substances upon processing, mainly heating. A common example is caramel, which is produced by heating sugars.
- A **smoke flavouring** means a smoke extract used in traditional foodstuffs smoking processes. These are obtained by collecting the smoke into a fluid, which can be applied in a different production process.

The EU has provided a list of flavouring compounds that can be used in foods. This list (74 pages) can be found at : http://europa.eu.int/comm/food/fs/sfp/addit_flavor/flav02_en.pdf and an additional register at http://europa.eu.int/comm/food/fs/sfp/addit_flavor/flav03_en.pdf .

Exhibit B